

**RIDGECROFT SCHOOL
STANDARD EARTH/ENVIRONMENTAL SCIENCE**

PACING GUIDE

TOPICS/CONCEPTS	TIME	CURRICULUM OBJECTIVES 1.01, 1.02, 1.03, 1.04, 1.05, 1.06	RESOURCE(S) EARTH SCIENCE (PUBLISHER: Glencoe) ISBN 0-07-861700-6 SE
FIRST GRADING PERIOD			
EARTH MATERIALS <ul style="list-style-type: none"> • The Nature of Science • Matter • Mineral • Rocks • Earth's Energy and Mineral Resources 	30	2.01, 2.03, 2.06, 2.07	TEXTBOOK: Chapters 1, 2, 3, 4, 5 Lab: Cookie Mining Activity
SECOND GRADING PERIOD			
CHANGING SURFACE OF EARTH <ul style="list-style-type: none"> • Views Of Earth • Weathering and Soil • Erosional Forces • Water Erosion and Deposition 	25	1.04, 2.02, 2.03, 2.04, 2.05, 4.01, 4.03	TEXTBOOK: Chapters 6, 7, 8, 9 Lab: Beginners Compass Game Lab: Basic Mapping Lab Learning to Calculate Specific Gravity
EARTH'S INTERNAL PROCESSES <ul style="list-style-type: none"> • Plate Tectonics 	5	2.02, 2.04	TEXTBOOK: Chapter 10
THIRD GRADING PERIOD			
EARTH'S INTERNAL PROCESSES <ul style="list-style-type: none"> • Earthquakes • Volcanoes 	15	2.02, 2.04	TEXTBOOK: Chapters 11, 12
CHANGE AND EARTH'S HISTORY <ul style="list-style-type: none"> • Clues to Earth's Past • Geologic Time 	10	3.01, 3.02	TEXTBOOK: Chapters 13, 14 Lab: Wet and Cold Lab: Radioactive Decay Lab: Geologic Calendar
REVIEW AND ASSESSMENT	5		
FOURTH GRADING PERIOD			
EARTH'S AIR AND WATER <ul style="list-style-type: none"> • Atmosphere • Weather • Climate 	30	2.03, 5.01, 5.02, 5.03	TEXTBOOK: Chapters 15, 16, 17
FIFTH GRADING PERIOD			
EARTH'S AIR AND WATER <ul style="list-style-type: none"> • Ocean Motion • Oceanography 	15	4.02, 4.03, 5.03	TEXTBOOK: Chapters 18, 19
YOU AND THE ENVIRONMENT <ul style="list-style-type: none"> • Our Impact on Land • Our Impact on Water and Air 	15	1.06, 2.05, 2.06, 2.07, 4.01, 4.03, 4.04, 4.05, 5.03	TEXTBOOK: Chapters 20, 21
SIXTH GRADING PERIOD			
ASTRONOMY <ul style="list-style-type: none"> • Exploring Space • The Sun-Earth-Moon System • The Solar System • Stars And Galaxies 	25	6.02, 6.03, 6.04, 6.05	TEXTBOOK: Chapters 22, 23, 23, 24 Lab: Stellar Evolution
REVIEW AND ASSESSMENT	5		

8/1/06

NC STANDARD COURSE OF STUDY

The Earth/Environmental science curriculum focuses on the function of Earth's systems. Emphasis is placed on matter, energy, plate tectonics, environmental awareness, materials availability, and the cycles that circulate energy and material through the earth system. Learners will study natural and technological systems. The program strands and unifying concepts provide a context for teaching content and process skill goals. All goals should focus on the unifying concepts:

- Systems, Order and Organization
- Evidence, Models, and Explanation
- Constancy, Change, and Measurement
- Evolution and Equilibrium
- Form and Function

COMPETENCY GOAL 1: THE LEARNER WILL DEVELOP ABILITIES NECESSARY TO DO AND UNDERSTAND SCIENTIFIC INQUIRY IN THE EARTH AND ENVIRONMENTAL SCIENCES.

1.01 Identify questions and problems in the earth and environmental sciences that can be answered through scientific investigations.

1.02 Design and conduct scientific investigations to answer questions related to earth and environmental science.

- Create testable hypotheses
- Identify variables.
- Use a control or comparison group when appropriate.
- Select and use appropriate measurement tools.
- Collect and record data.
- Organize data into charts and graphs.
- Analyze and interpret data.
- Communicate findings.

1.03 Evaluate the uses of satellite images and imaging techniques in the earth and environmental sciences.

1.04 Apply safety procedures in the laboratory and in field studies:

- Recognize and avoid potential hazards.
- Safely manipulate materials and equipment needed for scientific investigations.

1.05 Analyze reports of scientific investigations and environmental issues from an informed scientifically literate viewpoint including considerations of:

- Appropriate sample.
- Adequacy of experimental controls.
- Replication of findings.
- Alternative interpretations of the data.

1.06 Identify and evaluate a range of possible solutions to earth and environmental issues at the local, national, and global level including considerations of:

- Interdependent human and natural systems.
- Diverse perspectives.
- Short and long range impacts.
- Economic development, environmental quality and sustainability.
- Opportunities for and consequences of personal decisions.
- Risks and benefits of technological advances.

COMPETENCY GOAL 2: THE LEARNER WILL BUILD AN UNDERSTANDING OF LITHOSPHERIC MATERIALS, TECTONIC PROCESSES, AND THE HUMAN AND ENVIRONMENTAL IMPACTS OF NATURAL AND HUMAN-INDUCED CHANGES IN THE LITHOSPHERE.

2.01 Analyze the dependence of the physical properties of minerals on the arrangement and bonding of their atoms.

2.02 Analyze the historical development of the theory of plate tectonics.

2.03 Investigate and analyze the processes responsible for the rock cycle:

- Analyze the origin, texture and mineral composition of rocks.
- Trace the path of elements through the rock cycle.
- Relate rock formation to plate tectonics.
- Identify forms of energy that drive the rock cycle.
- Analyze the relationship between the rock cycle and processes in the atmosphere and hydrosphere.

2.04 Analyze seismic waves including velocity and refraction to:

- Infer Earth's internal structure.
- Locate earthquake epicenters.

2.05 Create and interpret topographic, soil and geologic maps using scale and legends.

2.06 Investigate and analyze the importance and impact of the economic development of earth's finite rock, mineral, soil, fossil fuel and other natural resources to society and our daily lives:

- Availability.
- Geographic distribution.
- Conservation/Stewardship.
- Recycling.
- Environmental impact.
- Challenge of rehabilitation of disturbed lands.

2.07 Analyze the sources and impacts of society's use of energy.

- Renewable and non-renewable sources.
- The impact of human choices on Earth and its systems.

<ul style="list-style-type: none"> • Measure earthquake magnitude. • Evaluate the level of seismic activity in North Carolina. 	
COMPETENCY GOAL 3: THE LEARNER WILL BUILD AN UNDERSTANDING OF THE ORIGIN AND EVOLUTION OF THE EARTH SYSTEM.	
<p>3.01 Assess evidence to interpret the order and impact of events in the geologic past:</p> <ul style="list-style-type: none"> • Relative and absolute dating techniques. • Statistical models of radioactive decay. • Fossil evidence of past life. • Uniformitarianism. • Stratigraphic principles. • Divisions of Geologic Time • Origin of the earth system. • Origin of life. 	<p>3.02 Evaluate the geologic history of North Carolina.</p>
COMPETENCY GOAL 4: THE LEARNER WILL BUILD AN UNDERSTANDING OF THE HYDROSPHERE AND ITS INTERACTIONS AND INFLUENCES ON THE LITHOSPHERE, THE ATMOSPHERE, AND ENVIRONMENTAL QUALITY.	
<p>4.01 Evaluate erosion and depositional processes:</p> <ul style="list-style-type: none"> • Formation of stream channels with respect to the work being done by the stream (i.e. down-cutting, lateral erosion, and transportation). • Nature and characteristics of sediments. • Effects on water quality • Effect of human choices on the rate of erosion. <p>4.02 Analyze mechanisms for generating ocean currents and upwelling:</p> <ul style="list-style-type: none"> • Temperature. • Coriolis effect. • Climatic influence. <p>4.03 Analyze the mechanisms that produce the various types of shorelines and their resultant landforms:</p> <ul style="list-style-type: none"> • Nature of underlying geology. • Long and short term sea-level history. • Formation and breaking of waves on adjacent topography. • Human impact. 	<p>4.04 Evaluate water resources:</p> <ul style="list-style-type: none"> • Storage and movement of groundwater. • Ecological services provided by the ocean • Environmental impacts of a growing human population. • Causes of natural and manmade contamination. <p>4.05 Investigate and analyze environmental issues and solutions for North Carolina's river basins, wetlands, and tidal environments:</p> <ul style="list-style-type: none"> • Water quality. • Shoreline changes. • Habitat preservation.
COMPETENCY GOAL 5: THE LEARNER WILL BUILD AN UNDERSTANDING OF THE DYNAMICS AND COMPOSITION OF THE ATMOSPHERE AND ITS LOCAL AND GLOBAL PROCESSES INFLUENCING CLIMATE AND AIR QUALITY.	
<p>5.01 Analyze air masses and the life cycle of weather systems:</p> <ul style="list-style-type: none"> • Planetary wind belts. • Air masses. • Frontal systems. • Cyclonic systems. <p>5.02 Evaluate meteorological observing, analysis, and prediction:</p> <ul style="list-style-type: none"> • Worldwide observing systems. • Meteorological data depiction. 	<p>5.03 Analyze global atmospheric changes including changes in CO₂, CH₄, and stratospheric O₃ and the consequences of these changes:</p> <ul style="list-style-type: none"> • Climate change. • Changes in weather patterns. • Increasing ultraviolet radiation. • Sea level changes.
COMPETENCY GOAL 6: THE LEARNER WILL ACQUIRE AN UNDERSTANDING OF THE EARTH IN THE SOLAR SYSTEM AND ITS POSITION IN THE UNIVERSE.	
<p>6.01 Analyze the theories of the formation of the universe and</p>	<p>6.04 Assess the spectra generated by stars and our sun as</p>

solar system.

6.02 Analyze planetary motion and the physical laws that explain that motion:

- Rotation.
- Revolution.
- Apparent diurnal motions of the stars, sun and moon.
- Effects of the tilt of the earth's axis.

6.03 Examine the sources of stellar energies.

- Life cycle of stars.
- Hertzsprung - Russell Diagram.

indicators of motion and composition (the Doppler effect).

6.05 Evaluate astronomers' use of various technologies to extend their senses:

- Optical telescopes.
- Cameras.
- Radio telescopes.
- Spectroscope.